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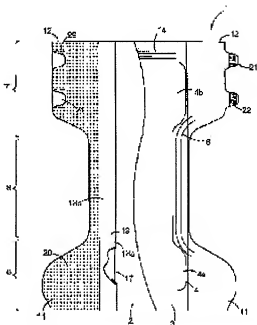
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(54) DISPOSABLE DIAPER

(57)Abstract:

PROBLEM TO BE SOLVED: To easily attach a mechanical-fastener male part in a fixed manner while increasing tensile strength in a wing part composed of a nonwoven fabric and formed in the rear girth area of a disposable diaper.

SOLUTION: The rear girth area 7 of the disposable diaper 1 is formed with a back wing part 12 whose inner surface is composed of the nonwoven fabric, and a fastener part 21 is extended from the wing part 12 in a girth direction. Many fine recessed parts 20 are formed in the inner surface of the wing part 12. The recessed parts 20 are formed in such a manner that the number per unit area of the recessed parts 20 is smaller in the section whereon the male part 22 of the fastener part 21 abuts when the fastener part 21 is folded onto the inner surface of the wing part 12 and greater in the rest of the sections.



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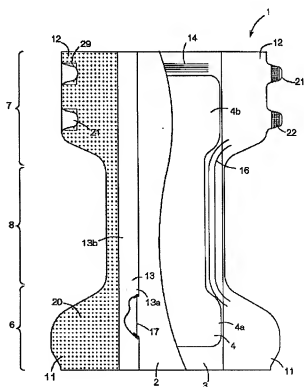
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(54) 【発明の名称】 使い捨ておむつ

(57) 【要約】

【課題】 使い捨ておむつの後胴周りに形成された不織布からなる翼部について、引張強度を向上させながら、メカニカルファスナ雄部材の止着を容易にする。

【解決手段】 使い捨ておむつ1の後胴周り域7に内面が不織布からなる後方翼部12が形成され、翼部12からは胴周方向へファスナ部21が延出する。翼部12の内面には、微細な凹部20が多数形成される。凹部20は、後方翼部12の内面において、単位面積当りの凹部20の数がファスナ部21の後方翼部12の内面へ折り重なったときにファスナ部21の雄部材22が当接する部位で少なく、残余の部位で多くなるように形成される。



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【特許請求の範囲】

【請求項 1】 透液性表面シートと、不透液性裏面シートと、これら両シート間に介在する吸液性コアとからなり、縦方向に前胴周り域と、後胴周り域と、これら両域間に位置する股下域とを有し、前記後胴周り域の両側には前記縦方向と交差する胴周り方向へ延びた翼部を有し、前記翼部には胴周り方向外方へ延出するファスナ部が形成され、前記ファスナ部の内面には、メカニカルファスナの雄部材が取り付けられている使い捨ておむつであって、

前記翼部は、内面と外面とを有し、それらのうちの少なくとも前記内面が不織布で形成され、前記不織布には多数の微細な凹部が形成されており、前記凹部は、前記ファスナ部を前記翼部の内面へ折り重ねたときに前記雄部材が当接する部位とその近傍とにおいて前記翼部の単位面積当たりの数が少なく、かつ、残余の部位において前記単位面積当たりの数が多く形成されている前記おむつ。

【請求項 2】 前記雄部材が当接する部位とその近傍は、前記凹部が多く形成されている部位に囲まれている請求項 1 記載のおむつ。

【請求項 3】 前記不織布は、それを構成する繊維が前記凹部において互いに融着している請求項 1 または 2 記載のおむつ。

【請求項 4】 前記不織布は、それを構成する繊維が前記凹部の周辺域に比べて前記凹部において互いに密着している請求項 1 ～ 3 のいずれかに記載のおむつ。

【請求項 5】 前記翼部が前記翼部の内面を形成する内側不織布と外面を形成する外側不織布とからなり、これら両不織布が前記凹部において一体化している請求項 1 ～ 4 のいずれかに記載のおむつ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 この発明は後胴周り域に翼部を備えた使い捨ておむつに関する。

【0002】

【従来の技術】 従来、後胴周り域に翼部を備えた使い捨ておむつはよく知られている。かかるおむつでは、翼部の胴周り方向縁部に、後胴周り域を前胴周り域と連結するためファスナが設けられている。ファスナには、粘着テープまたはメカニカルファスナの雄部材のいずれかが一般に使用される。翼部の内面は、おむつ着用者の肌を刺激することがないように不織布で形成されることが多い。

【0003】

【発明が解決しようとする課題】 前記従来のおむつのファスナにメカニカルファスナの雄部材を使用する場合、おむつの製造過程からおむつを着用するまでの間は、ファスナを翼部の内面に折り重ね、翼部の不織布に対して剥離可能に止着しておくことが好ましい。そうすることによって、おむつは製造者および需要者にとって取り扱

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い易いものになる。一方、おむつが大人に使用されるもの、特に寝たきりの大人に使用されるものである場合には、おむつを着脱させるときに翼部を強く引張ることがあるから、翼部の不織布はその方に耐えられる強度の高いものでなければならない。そうした不織布の強度を高める手段の 1 つとして、不織布に加熱状態でエンボス加工を施すことができるが、その手段の採用は、一方で、不織布の毛羽立ちを減らし、メカニカルファスナの雄部材の翼部に対する止着を困難にする。

10 【0004】 そこで、この発明は、前記従来のおむつにおいて、翼部の強度が高く、しかもメカニカルファスナの雄部材の止着が容易であるように、翼部に対して改良を施すことを課題にしている。

【0005】

【課題を解決するための手段】 前記課題解決のために、この発明が対象とするのは、透液性表面シートと、不透液性裏面シートと、これら両シート間に介在する吸液性コアとからなり、縦方向に前胴周り域と、後胴周り域と、これら両域間に位置する股下域とを有し、前記後胴周り域の両側には前記縦方向と交差する胴周り方向へ延びた翼部を有し、前記翼部には胴周り方向外方へ延出するファスナ部が形成され、前記ファスナ部の内面には、メカニカルファスナの雄部材が取り付けられている使い捨ておむつである。

20 【0006】 かかるおむつにおいて、この発明が特徴とするところは、前記翼部が内面と外面とを有し、それらのうちの少なくとも前記内面が不織布で形成され、前記不織布には多数の微細な凹部が形成されており、前記凹部は、前記ファスナ部を前記翼部の内面へ折り重ねたときに前記雄部材が当接する部位とその近傍とにおいて前記翼部の単位面積当たりの数が少なく、かつ、残余の部位において前記単位面積当たりの数が多く形成されていること、にある。

【0007】

【発明の実施の形態】 添付の図面を参照し、この発明に係る使い捨ておむつの詳細を説明すると、以下のとおりである。

【0008】 図 1、2 は、おむつ 1 の内面側を示す部分破断平面図と、おむつ 1 の外面側を示す平面図である。おむつ 1 は、透液性表面シート 2 と、不透液性裏面シート 3 と、これら両シート 2、3 間に介在する吸液性コア 4 とを有する。おむつ 1 の縦方向（図の上下方向）には、前胴周り域 6 と、後胴周り域 7 と、これら両域 6、7 間に位置する股下域 8 とが形成されている。前後胴周り域 6、7 の各側部には、おむつ 1 の胴周り方向外方へ延びる前方翼部 11 と、後方翼部 12 とが形成されている。前後方翼部 11、12 と股下域 8 の側部とは、多数の微細な凹部 20 が形成されている。後胴周り域 7 の端縁部では、複数条の胴周り弾性部材 14 が胴周り方向へ延びている。股下域 8 の両側部には複数条の脚周り弾

性部材 16 が縦方向へ延びている。これら両弾性部材 14、16 は、表裏面シート 2 と 3 との間、またはこれらシート 2、3 に接合して側方へ延びるシートとシートとの間にあって、伸長状態でこれらシートのいずれかに接合している。

【0009】おむつ 1 内面側の両側部縦方向には、帯状のバリアカフ 13 が延びている。バリアカフ 13 は、外側縁部 13b と縦方向両端部とがおむつ 1 の内面に固定されているが、内側縁部 13a は、おむつ 1 の内面に固定されおらず、縦方向へ延びる支持弾性部材 17 を挟むようにして袋状に折り重ねられている。支持弾性部材 17 は、伸長状態にあり、バリアカフ 13 の内面のうちの少なくとも縦方向両端部のそれに接合しており、おむつ 1 が着用状態にあるときには、収縮してバリアカフ 13 をおむつ 1 の内面の上方へ向かって起立させる。かかるバリアカフ 13 は、おむつ 1 の内側へ向かって開口する体液漏れ防止用のポケット（図示せず）を形成することができる。

【0010】後方翼部 12 の各側縁部には、翼部 12 を部分的に胴周方向へ突出させることによってファスナ部 21 が縦方向に一つずつ形成されている。ファスナ部 21 の内面には、メカニカルファスナの雄部材 22 がファスナ部 21 を切断するように取り付けられている。図 1 において、左方のファスナ部 21 は翼部 12 の内面に折り重ねた状態で示され、右方のファスナ部 21 は、翼部 21 から胴周方向外方へ延びた状態で示されている。また、図 2 は、ファスナ部 21 がいずれも折り重ねた状態で示されている。これらのファスナ部 21 は、前胴周方向域の外面に取りつけられたメカニカルファスナの雌部材 23 の適宜の位置に取り外し可能に固定することができるが、その固定によって前後胴周方向域 6、7 が互いに連結される。

【0011】図 3、4 は、後方翼部 12 を拡大して示すおむつ 1 の部分平面図と、同図の I-V 線断面図である。これらの図ではファスナ部 21 が胴周方向外方へ延びた状態で示されている。後方翼部 12 は、おむつ 1 の内面側を形成する内側不織布 26 と、外面側を形成する外側不織布 27 とを有し、これら両不織布 26、27 がホットメルト接着剤 38 を介して互いに接合している。後方翼部 12 から延びるファスナ部 21 は、これら不織布 26、27 を部分的に胴周方向へ延ばすことによって形成されており、内側不織布 26 に対して雄部材 22 が接着剤 36 を介して接合している。かかる雄部材 22 は、ファスナ部 21 がおむつ 1 の内面側に折曲されると、後方翼部 12 に形成された仮想線で示されるターゲットゾーン 29 に離断可能に止着する（図 1 参照）。

【0012】後方翼部 12 では、ファスナ部 21 を含むほぼ全域において、内側不織布 26 に多数の凹部 20 が形成されている。凹部 20 は、内側不織布 26 を部分的に押圧することによって、より好ましくは内側不織布 2

6 を構成する熱可塑性合成繊維が軟化または熔融するような温度下で押圧することによって形成される。凹部 20 では、その周辺域に比べて、押圧された繊維どうしが密に接触し、機械的に強く交絡したり、溶着したりしている。内側不織布 26 は、そうした交絡や融着によって、構成繊維相互の動きが抑制され、引張強度と剛性が高くなる。それゆえ、このおむつ 1 の後方翼部 12 では、引張強度を向上させるために坪量の大きな不織布を多く使用するという必要がない。しかし、凹部 20 が多数形成されることによって、内側不織布 26 は、繊維の毛羽立ちが少なくなり、雄部材 22 の止着が難しくなるから、後方翼部 12 における凹部 20 の単位面積当たりの数量（凹部 20 の密度）がターゲットゾーン 29 では少なく、それ以外では多くなるように作られる。例えば、内側不織布 26 が坪量 $10 \sim 100 \text{ g/m}^2$ のポリプロピレン繊維からなるものである場合、直径 $0.2 \sim 1.5 \text{ mm}$ の多数の凹部 20 が後方翼部 12 で含める面積割合は $10 \sim 50 \%$ にする。ただし、ターゲットゾーン 29 では、その面積割合よりも $5 \sim 20 \%$ 少ない値にする。

【0013】後方翼部 12 がこのように作られると、内側不織布 26 は引張強度が本来低いものであっても、凹部 20 の形成によってその強度が向上し、しかも、凹部 20 の形成によって雄部材 22 の止着力が低下しかなないという問題は、毛羽立ちの多いターゲットゾーン 29 の形成によって解消される。ターゲットゾーン 29 の周囲では凹部 20 の密度が高く、引張強度が高いから、ゾーン 29 の引張強度が低くても、それによって後方翼部 12 の引張強度が著しく低下するということはない。

【0014】おむつ 1 が大人用のもの、特に寝たきりの大人に使用されるものである場合、おむつ 1 を着脱させるときに後方翼部 12 を強く引張らなければならないことがある。しかし、そのことに備えて後方翼部 12 に坪量の大きい不織布を使用することも、材料コストと省資源という点において必ずしも歓迎されないから、このおむつ 1 におけるように、凹部 20 の形成によって引張強度の向上を図ることは有意義である。

【0015】なお、おむつ 1 において、前方翼部 11 と、股下域 8 の両側部とは、後方翼部 12 とほぼ同様に作られている。すなわち、内側不織布 26 と外側不織布 27 とが接着剤 38 で接合し、凹部 20 が高密度に形成されている。股下域 8 では、凹部 20 の形成で高剛性化した内側不織布 26 がおむつ着用者の肌を刺激することがある。その恐れがあるときには、股下域 8 における凹部 20 の密度をターゲットゾーン 29 と同様に、またはそれ以下に低くすることができ、これら前方翼部 11、12 と股下域 8 の側部とを形成している内外側不織布 26、27 は、好ましくは不透性シートで形成されているバリアカフ 13 の外側縁部 13b にホットメルト接着剤 39 または溶着によって接合している。また、バリ

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アカフ 13 の外側縁部 13b は、ホットメルト接着剤 39 または溶着によって表面シート 2 に接合している。おむつ 1 に使用される接着剤 36~39 は、縦方向と胴周り方向とのうちの少なくとも一方へ間欠的に塗布することができる。

【0016】図 5 は、この発明の実施態様の一例を示す図 4 と同様の図面である。この場合のおむつ 1 における後方翼部 12 では、内側不織布 26 に凹部 20 が形成され、外側不織布 27 に凹部 30 が形成されている。凹部 20 と 30 との位置は、図示されるように上下方向において互いに一致している場合と、図の横方向において凹部 30 が隣り合う凹部 20 と 20 との間に位置している場合とがある。凹部 30 は、外側不織布 27 の引張強度を向上させ、後方翼部 12 の剛性を高めるように作用する。凹部 20 と 30 との深さは、図示側に限らず、内外側不織布 26、27 にまたがって延びていてもよい。例えば、凹部 20 は内側不織布 26 から外側不織布 27 にまで達していてもよい。かかる場合の凹部 20 や 30 は、両不織布 26、27 の接合力を強化することができる。その接合力が高い場合には、両不織布 26、27 間に介在する接着剤 38 を省くことも可能である。

【0017】図 6 もまた、実施態様の一例を示す図 3 と同様の図面である。この場合のおむつ 1 における後方翼部 12 では、ターゲットゾーン 29 が翼部 12 を縦断している。このようなおむつ 1 では、高速連続生産を行う一連の工程において、ファスナ部 21 とターゲットゾーン 29 との位置を縦方向において調整することが不要で、それだけ工程管理が容易になる。

【0018】図 7 もまた、実施態様の一例を示す図 3 と同様の図面である。この場合のおむつ 1 における後方翼部 12 では、翼部 12 とは別体で作られたテープ部材 33 によってファスナ部 21 が形成されている。テープ部材 33 は、例えばプラスチックフィルムからなるもので、一端部が後方翼部 12 の外面に固定されている。テープ部材 33 の内面に取り付けられたメカニカルファスナの雄部材 22 は、後方翼部 12 のターゲットゾーン 29 に止着される。

【0019】この発明の実施例において、内側不織布 26 と外側不織布 27 とで形成された後方翼部 12 と、前*

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* 方翼部 11 と、股下域 8 の側部とは、外側不織布 27 を省き、内側不織布 26 だけで形成することも可能である。また、この発明は、後方翼部 12 を前方翼部 11 に代える一方、前方翼部 11 を後方翼部 12 に代えて実施することも可能である。

【0020】

【発明の効果】この発明に係る使い捨ておむつでは、不織布で形成された後方翼部の内面に微細な凹部を密度が高くなるように形成して翼部の強度を向上させる一方、メカニカルファスナの雄部材を止着させるべきターゲットゾーンでは凹部の密度が低くなるように形成したから、後方翼部は引張強度が高く、かつ、ファスナの止着が容易である。

【図面の簡単な説明】

【図 1】使い捨ておむつの内面側を示す部分破断平面図。

【図 2】使い捨ておむつの外面側を示す平面図。

【図 3】後方翼部の部分拡大図。

【図 4】図 3 の I-V-I 線断面図。

【図 5】実施態様の一例を示す図 4 と同様の図面。

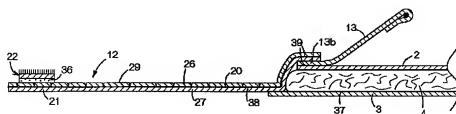
【図 6】実施態様の一例を示す図 3 と同様の図面。

【図 7】実施態様の一例を示す図 3 と同様の図面。

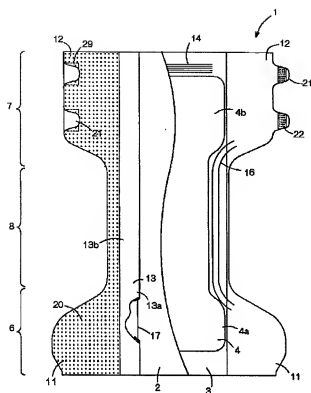
【符号の説明】

- 1 使い捨ておむつ
- 2 表面シート
- 3 裏面シート
- 4 コア
- 6 前胴周り域
- 7 後胴周り域
- 8 股下域
- 11 前方翼部
- 12 後方翼部
- 20 凹部
- 21 ファスナ部
- 22 雄部材
- 26 内側不織布
- 27 外側不織布
- 29 第 2 区域 (ターゲットゾーン)

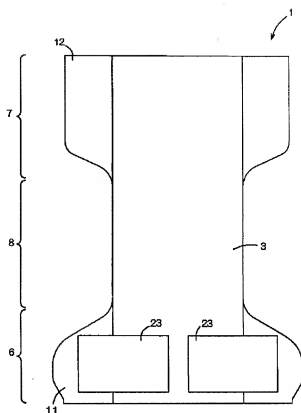
【図 4】



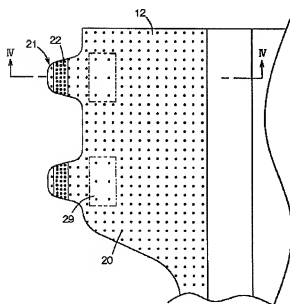
【図1】



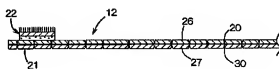
【図2】



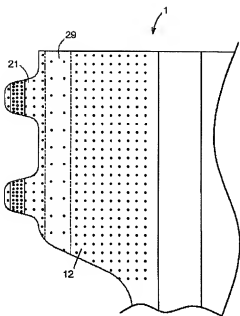
【図3】



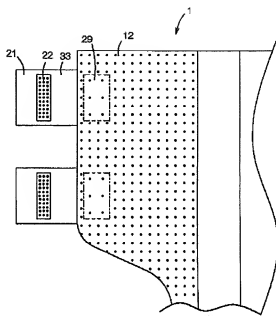
【図5】



【図6】



【図7】



フロントページの続き

F ターム(参考) 3B029 BB06 BC07 BD01 BD06 BD09
4C098 CC10 CC12 CE09 DD10 DD12

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CLAIMS

[Claim(s)]

[Claim 1] It consists of a liquid permeability surface sheet, a non-liquid-permeable nature rear-face sheet, and an absorbent core that intervenes among both [these] sheets. To a lengthwise direction The circumference region of a forward fuselage assembly, Have a circumference region of a back drum, and the length-from-the-crotch-to-the-cuff region located among both [these] regions, and it has the vane prolonged on both sides of the circumference region of said back drum in the direction of the circumference of a drum which intersects said lengthwise direction. The fastener section which extends to the method of the outside of the direction of the circumference of a drum is formed in said vane. To the inside of said fastener section It is the disposable diaper with which the male part material of a mechanical fastener is attached. Said vane It has an inside and external surface, and said inside is formed with a nonwoven fabric at least, and many detailed crevices of them are formed in said nonwoven fabric. Said crevice Said diaper with which many numbers per said unit area are formed [in / when said fastener section is turned up to the inside of said vane, in the part where said male part material contacts, and its near, there are few numbers per unit area of said vane, and / the residual part].

[Claim 2] The part where said male part material contacts, and its near are a diaper according to claim 1 with which said crevice is surrounded by the part currently formed. [many]

[Claim 3] Said nonwoven fabric is a diaper according to claim 1 or 2 which the fiber which constitutes it is welding in said crevice.

[Claim 4] Said nonwoven fabric is a diaper according to claim 1 to 3 which the fiber which constitutes it has stuck in said crevice compared with the circumference region of said crevice.

[Claim 5] The diaper according to claim 1 to 4 which consists of an inside nonwoven fabric with which said vane forms the inside of said vane, and an outside nonwoven fabric which forms external surface, and both [these] nonwoven fabrics are unifying in said crevice.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the disposable diaper which equipped the circumference region of a back drum with the vane.

[0002]

[Description of the Prior Art] Conventionally, the disposable diaper which equipped the circumference region of a back drum with the vane is known well. In this diaper, in order to connect the circumference region of a back drum with the circumference region of a forward fuselage assembly, the fastener is formed in the direction edge of the circumference of a drum of a vane. Generally either of the male part material of adhesive tape or a mechanical fastener is used for a fastener. The inside of a vane is formed with a nonwoven fabric in many cases so that a diaper wearer's skin may not be stimulated.

[0003]

[Problem(s) to be Solved by the Invention] It is desirable to turn up a fastener to the inside of a vane until it wears a diaper from the manufacture process of a diaper, when using the male part material of a mechanical fastener for the fastener of said conventional diaper, and to attach firmly possible [exfoliation] to the nonwoven fabric of a vane. It is easy to deal with a diaper by doing so for a manufacturer and a need person. When diapers are the thing used for an adult, especially the thing used for a bedridden adult, since a vane may be strongly pulled when making a diaper detach and attach, the reinforcement of the nonwoven fabric of a vane which can bear the force must be on the other hand, high. As one of the means which raise the reinforcement of such a nonwoven fabric, although embossing may be performed to a nonwoven fabric in the state of heating, adoption of the means is one side, reduces the fuzz of a nonwoven fabric and makes difficult firm attachment to the vane of the male part material of a mechanical fastener.

[0004] Then, in said conventional diaper, this invention has the high reinforcement of a vane, and moreover, it makes it the technical problem to improve to a vane so that easily [firm attachment of the male part material of a mechanical fastener].

[0005]

[Means for Solving the Problem] For said technical-problem solution, this invention an object It consists of a liquid permeability surface sheet, a non-liquid-permeable nature rear-face sheet, and an absorbent core that intervenes among both [these] sheets. To a lengthwise direction The circumference region of a forward fuselage assembly, Have a circumference region of a back drum, and the length-from-the-crotch-to-the-cuff region located among both [these] regions, and it has the vane prolonged on both sides of the circumference region of said back drum in the direction of the circumference of a drum which intersects said lengthwise direction. It is the disposable diaper with which the fastener section which extends to the method of the outside of the direction of the circumference of a drum is formed in said vane, and the male part material of a mechanical fastener is attached in the inside of said fastener section.

[0006] In this diaper, the place by which this invention is characterized Said vane has an inside and

external surface, said inside is formed with a nonwoven fabric at least, and many detailed crevices of them are formed in said nonwoven fabric. Said crevice When said fastener section is turned up to the inside of said vane, in the part where said male part material contacts, and its near, there are few numbers per unit area of said vane, and it is in many numbers per said unit area being formed in a residual part.

[0007]

[Embodiment of the Invention] It is as follows when the detail of the disposable diaper concerning this invention is explained with reference to an attached drawing.

[0008] Drawing 1 and 2 are the partial fracture top view showing the inside side of a diaper 1, and the top view showing the external surface side of a diaper 1. A diaper 1 has the liquid permeability surface sheet 2, the non-liquid-permeable nature rear-face sheet 3, and both [these] the sheets 2 and the absorbent core 4 which intervenes among three. The circumference region 6 of a forward fuselage assembly, the circumference region 7 of a back drum, and both [these] the regions 6 and the length-from-the-crotch-to-the-cuff region 8 located among seven are formed in the lengthwise direction (the vertical direction of drawing) of a diaper 1. The front vane 11 prolonged to the method of the outside of the direction of the circumference of a drum of a diaper 1 and the back vane 12 are formed in each flank of the circumference regions 6 and 7 of an order drum. Many detailed crevices 20 are formed in the method vanes 11 and 12 of order, and the flank of the length-from-the-crotch-to-the-cuff region 8. In the edge section of the circumference region 7 of a back drum, the circumference elastic member 14 of a drum of two or more articles is prolonged in the direction of the circumference of a foot. In the both-sides section of the length-from-the-crotch-to-the-cuff region 8, the circumference elastic member 16 of a foot of two or more articles is prolonged to the lengthwise direction. Both [these] the elastic members 14 and 16 did as the sheet and sheet which join between the front rear-face sheets 2 and 3 or to these sheets 2 and 3, and are prolonged to the side, and are joined to either of these sheets in the state of expanding.

[0009] The band-like barrier cuff 13 is prolonged in the both-sides section lengthwise direction by the side of diaper 1 inside. It is turned up by saccate as the support elastic member 17 to which inside edge 13a is not fixed to the inside of a diaper 1, but the barrier cuff 13 extends to a lengthwise direction although radial-border section 13b and lengthwise direction both ends are being fixed to the inside of a diaper 1 is pinched. The support elastic member 17 is in an expanding condition, and when [of the insides of the barrier cuff 13] it has joined to it of lengthwise direction both ends at least and a diaper 1 is in a wear condition, it contracts and it makes the barrier cuff 13 stand up toward the upper part of the inside of a diaper 1. This barrier cuff 13 can form the pocket for body fluid leakage prevention (not shown) which carries out opening toward the inside of a diaper 1.

[0010] The fastener section 21 is formed in one lengthwise direction at a time by making a vane 12 project in the direction of the circumference of a drum partially in each side edge section of the back vane 12. It is attached in the inside of the fastener section 21 so that the male part material 22 of a mechanical fastener may travel through the fastener section 21. In drawing 1, the left fastener section 21 is shown in the condition of having turned up to the inside of a vane 12, and the fastener 21 of the method of the right is shown in the condition of having extended from the vane 21 to the method of the outside of the direction of the circumference of a drum. Moreover, drawing 2 is shown after the fastener section 21 has turned each up. These fastener sections 21 can be fixed to the proper location of the female member 23 of the mechanical fastener attached in the external surface of the circumference region 6 of a forward fuselage assembly dismountable, and the circumference regions 6 and 7 of an order drum are mutually connected by the immobilization.

[0011] Drawing 3 and 4 are the part plan of the diaper 1 in which the back vane 12 is expanded and shown, and the IV-IV line sectional view of this drawing. In these drawings, the fastener section 21 is shown in the condition of having extended to the method of the outside of the direction of the circumference of a drum. The back vane 12 had the inside nonwoven fabric 26 which forms the inside side of a diaper 1, and the outside nonwoven fabric 27 which forms an external surface side, and both [these] the nonwoven fabrics 26 and 27 have joined it mutually through hot melt adhesive 38. The

fastener section 21 prolonged from the back vane 12 is formed by extending these nonwoven fabrics 26 and 27 in the direction of the circumference of a drum partially, and the male part material 22 has joined it through adhesives 36 to the inside nonwoven fabric 26. This male part material 22 will be attached firmly to the target zone 29 shown by the imaginary line formed in the back vane 12 possible [exfoliation], if the fastener section 21 is bent at the inside side of a diaper 1 (refer to [drawing 1](#)).

[0012] the fastener section 21 is included in the back vane 12 -- in the whole region, many crevices 20 are mostly formed in the inside nonwoven fabric 26. A crevice 20 is formed by pressing the inside nonwoven fabric 26 partially by pressing under temperature which the thermoplastic synthetic fiber which constitutes the inside nonwoven fabric 26 more preferably softens or fuses. In the crevice 20, compared with the circumference region, it contacts densely, and a confounding is carried out strongly mechanically or the pressed fiber welds. The motion between configuration fiber is controlled by such a confounding and welding, and, as for the inside nonwoven fabric 26, tensile strength and rigidity become high by them. So, in the back vane 12 of this diaper 1, in order to raise tensile strength, it is not necessary to say that many nonwoven fabrics with a big basis weight are used. however, the quantity per unit area of the crevice 20 in the back vane 12 since the fuzz of the inside nonwoven fabric 26 of fiber decreases and firm attachment of the male part material 22 becomes difficult by forming many crevices 20 (consistency of a crevice 20) -- a target zone 29 -- few -- other than this -- coming out -- it is made so that it may increase. For example, the inside nonwoven fabric 26 is a basis weight 10 - 100 g/m². When it is what consists of a polypropylene fiber, the crevice 20 of a large number with a diameter of 0.2-1.5mm makes the area rate included by the back vane 12 10 - 50%. However, in a target zone 29, it is made values fewer 5 to 20% than the area rate.

[0013] If the back vane 12 is made in this way, even if the inside nonwoven fabric 26 originally has low tensile strength, the reinforcement will improve by formation of a crevice 20, and, moreover, the problem that the firm attachment force of the male part material 22 may decline by formation of a crevice 20 will be solved by formation of the target zone 29 with much fuzz. Around a target zone 29, since the consistency of a crevice 20 is high and tensile strength is high, even if the tensile strength of a zone 29 is low, the tensile strength of the back vane 12 does not necessarily fall remarkably by it.

[0014] When diapers 1 are a thing for adults, especially the thing used for a bedridden adult, and making a diaper 1 detach and attach, the back vane 12 may have to be pulled strongly. However, since it is not necessarily welcomed in the point of ingredient cost and saving resources, as for the thing [as / in this diaper 1] for which improvement in tensile strength is aimed at by formation of a crevice 20, it is significant to use a nonwoven fabric with a large basis weight for the back vane 12 in preparation for that.

[0015] In addition, in the diaper 1, it is made by the front vane 11 and the both-sides section of the length-from-the-crotch-to-the-cuff region 8 almost like the back vane 12. That is, the inside nonwoven fabric 26 and the outside nonwoven fabric 27 join with adhesives 38, and the crevice 20 is formed in high density. In the length-from-the-crotch-to-the-cuff region 8, the inside nonwoven fabric 26 formed into high rigidity by formation of a crevice 20 may stimulate a diaper wearer's skin. When there is the fear, the consistency of the crevice 20 in the length-from-the-crotch-to-the-cuff region 8 can be made low less than [it] like a target zone 29. The inside-and-outside side nonwoven fabrics 26 and 27 which form the method vanes 11 and 12 of these order and the flank of the length-from-the-crotch-to-the-cuff region 8 are joined to radial-border section 13b of the barrier cuff 13 currently preferably formed with the impermeable sheet by hot melt adhesive 39 or joining. Moreover, radial-border section 13b of the barrier cuff 13 is joined to the surface sheet 2 by hot melt adhesive 39 or joining. the adhesives 36-39 used for a diaper 1 -- the inside of a lengthwise direction and the direction of the circumference of a drum -- it can apply to an one direction intermittently at least.

[0016] [Drawing 5](#) is the same drawing as [drawing 4](#) which shows an example of the embodiment of this invention. In the back vane 12 in the diaper 1 in this case, a crevice 20 is formed in the inside nonwoven fabric 26, and the crevice 30 is formed in the outside nonwoven fabric 27. The location with crevices 20 and 30 may be located between the case where it is mutually in agreement in the vertical direction so that it may be illustrated, and the crevices 20 and 20 where a crevice 30 adjoins each other in the

longitudinal direction of drawing. A crevice 30 raises the tensile strength of the outside nonwoven fabric 27, and it acts so that the rigidity of the back vane 12 may be raised. The depth with crevices 20 and 30 may be prolonged not only ranging over an illustration side but ranging over the inside-and-outside side nonwoven fabrics 26 and 27. For example, the crevice 20 may reach even the outside nonwoven fabric 27 from the inside nonwoven fabric 26. The crevice 20 in this case and 30 can strengthen the junction force of both the nonwoven fabrics 26 and 27. When the junction force is high, it is also possible to exclude both the nonwoven fabrics 26 and the adhesives 38 which intervene among 27.

[0017] Drawing 6 is also the same drawing as drawing 3 which shows an example of an embodiment. The target zone 29 runs through a vane 12 in the back vane 12 in the diaper 1 in this case. In such a diaper 1, in a series of processes of performing a high-speed mass production, it is unnecessary to adjust the location of the fastener section 21 and a target zone 29 in a lengthwise direction, and production control becomes easy so much.

[0018] Drawing 7 is also the same drawing as drawing 3 which shows an example of an embodiment. In the back vane 12 in the diaper 1 in this case, the tape member 33 in which the fastener section 21 is formed consists of plastic film, and the end section is being fixed to the external surface of the back vane 12 by the tape member 33 from which the vane 12 was made by another object. The male part material 22 of the mechanical fastener attached in the inside of the tape member 33 is attached firmly to the target zone 29 of the back vane 12.

[0019] In the example of this invention, the outside nonwoven fabric 27 is excluded and the back vane 12 formed with the inside nonwoven fabric 26 and the outside nonwoven fabric 27, the front vane 11, and the flank of the length-from-the-crotch-to-the-cuff region 8 can also be formed only with the inside nonwoven fabric 26. Moreover, while this invention replaces the back vane 12 with the front vane 11, the front vane 11 is replaced with the back vane 12, and it can also carry it out.

[0020]

[Effect of the Invention] While forming a crevice detailed to the inside of the back vane formed with the nonwoven fabric in the disposable diaper concerning this invention so that a consistency may become high, and raising the reinforcement of a vane, since it formed so that the consistency of a crevice might become low, a back vane has high tensile strength, and firm attachment of a fastener is easy for it in the target zone to which the male part material of a mechanical fastener should be made to attach firmly.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the disposable diaper which equipped the circumference region of a back drum with the vane.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] Conventionally, the disposable diaper which equipped the circumference region of a back drum with the vane is known well. In this diaper, in order to connect the circumference region of a back drum with the circumference region of a forward fuselage assembly, the fastener is formed in the direction edge of the circumference of a drum of a vane. Generally either of the male part material of adhesive tape or a mechanical fastener is used for a fastener. The inside of a vane is formed with a nonwoven fabric in many cases so that a diaper wearer's skin may not be stimulated.

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EFFECT OF THE INVENTION

[Effect of the Invention] While forming a crevice detailed to the inside of the back vane formed with the nonwoven fabric in the disposable diaper concerning this invention so that a consistency may become high, and raising the reinforcement of a vane, since it formed so that the consistency of a crevice might become low, a back vane has high tensile strength, and firm attachment of a fastener is easy for it in the target zone to which the male part material of a mechanical fastener should be made to attach firmly.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] It is desirable to turn up a fastener to the inside of a vane until it wears a diaper from the manufacture process of a diaper, when using the male part material of a mechanical fastener for the fastener of said conventional diaper, and to attach firmly possible [exfoliation] to the nonwoven fabric of a vane. It is easy to deal with a diaper by doing so for a manufacturer and a need person. When diapers are the thing used for an adult, especially the thing used for a bedridden adult, since a vane may be strongly pulled when making a diaper detach and attach, the reinforcement of the nonwoven fabric of a vane which can bear the force must be on the other hand, high. As one of the means which raise the reinforcement of such a nonwoven fabric, although embossing may be performed to a nonwoven fabric in the state of heating, adoption of the means is one side, reduces the fuzz of a nonwoven fabric and makes difficult firm attachment to the vane of the male part material of a mechanical fastener.

[0004] Then, in said conventional diaper, this invention has the high reinforcement of a vane, and moreover, it makes it the technical problem to improve to a vane so that easily [firm attachment of the male part material of a mechanical fastener].

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MEANS

[Means for Solving the Problem] For said technical-problem solution, this invention an object It consists of a liquid permeability surface sheet, a non-liquid-permeable nature rear-face sheet, and an absorbent core that intervenes among both [these] sheets. To a lengthwise direction The circumference region of a forward fuselage assembly, Have a circumference region of a back drum, and the length-from-the-crotch-to-the-cuff region located among both [these] regions, and it has the vane prolonged on both sides of the circumference region of said back drum in the direction of the circumference of a drum which intersects said lengthwise direction. It is the disposable diaper with which the fastener section which extends to the method of the outside of the direction of the circumference of a drum is formed in said vane, and the male part material of a mechanical fastener is attached in the inside of said fastener section.

[0006] In this diaper, the place by which this invention is characterized Said vane has an inside and external surface, said inside is formed with a nonwoven fabric at least, and many detailed crevices of them are formed in said nonwoven fabric. Said crevice When said fastener section is turned up to the inside of said vane, in the part where said male part material contacts, and its near, there are few numbers per unit area of said vane, and it is in many numbers per said unit area being formed in a residual part.

[0007]

[Embodiment of the Invention] It is as follows when the detail of the disposable diaper concerning this invention is explained with reference to an attached drawing.

[0008] Drawing 1 and 2 are the partial fracture top view showing the inside side of a diaper 1, and the top view showing the external surface side of a diaper 1. A diaper 1 has the liquid permeability surface sheet 2, the non-liquid-permeable nature rear-face sheet 3, and both [these] the sheets 2 and the absorbent core 4 which intervenes among three. The circumference region 6 of a forward fuselage assembly, the circumference region 7 of a back drum, and both [these] the regions 6 and the length-from-the-crotch-to-the-cuff region 8 located among seven are formed in the lengthwise direction (the vertical direction of drawing) of a diaper 1. The front vane 11 prolonged to the method of the outside of the direction of the circumference of a drum of a diaper 1 and the back vane 12 are formed in each flank of the circumference regions 6 and 7 of an order drum. Many detailed crevices 20 are formed in the method vanes 11 and 12 of order, and the flank of the length-from-the-crotch-to-the-cuff region 8. In the edge section of the circumference region 7 of a back drum, the circumference elastic member 14 of a drum of two or more articles is prolonged in the direction of the circumference of a foot. In the both-sides section of the length-from-the-crotch-to-the-cuff region 8, the circumference elastic member 16 of a foot of two or more articles is prolonged to the lengthwise direction. Both [these] the elastic members 14 and 16 did as the sheet and sheet which join between the front rear-face sheets 2 and 3 or to these sheets 2 and 3, and are prolonged to the side, and are joined to either of these sheets in the state of expanding.

[0009] The band-like barrier cuff 13 is prolonged in the both-sides section lengthwise direction by the side of diaper 1 inside. It is turned up by saccate as the support elastic member 17 to which inside edge

13a is not fixed to the inside of a diaper 1, but the barrier cuff 13 extends to a lengthwise direction although radial-border section 13b and lengthwise direction both ends are being fixed to the inside of a diaper 1 is pinched. The support elastic member 17 is in an expanding condition, and when [of the insides of the barrier cuff 13] it has joined to it of lengthwise direction both ends at least and a diaper 1 is in a wear condition, it contracts and it makes the barrier cuff 13 stand up toward the upper part of the inside of a diaper 1. This barrier cuff 13 can form the pocket for body fluid leakage prevention (not shown) which carries out opening toward the inside of a diaper 1.

[0010] The fastener section 21 is formed in one lengthwise direction at a time by making a vane 12 project in the direction of the circumference of a drum partially in each side edge section of the back vane 12. It is attached in the inside of the fastener section 21 so that the male part material 22 of a mechanical fastener may travel through the fastener section 21. In drawing 1, the left fastener section 21 is shown in the condition of having turned up to the inside of a vane 12, and the fastener 21 of the method of the right is shown in the condition of having extended from the vane 21 to the method of the outside of the direction of the circumference of a drum. Moreover, drawing 2 is shown after the fastener section 21 has turned each up. These fastener sections 21 can be fixed to the proper location of the female member 23 of the mechanical fastener attached in the external surface of the circumference region 6 of a forward fuselage assembly dismountable, and the circumference regions 6 and 7 of an order drum are mutually connected by the immobilization.

[0011] Drawing 3 and 4 are the part plan of the diaper 1 in which the back vane 12 is expanded and shown, and the IV-IV line sectional view of this drawing. In these drawings, the fastener section 21 is shown in the condition of having extended to the method of the outside of the direction of the circumference of a drum. The back vane 12 had the inside nonwoven fabric 26 which forms the inside side of a diaper 1, and the outside nonwoven fabric 27 which forms an external surface side, and both [these] the nonwoven fabrics 26 and 27 have joined it mutually through hot melt adhesive 38. The fastener section 21 prolonged from the back vane 12 is formed by extending these nonwoven fabrics 26 and 27 in the direction of the circumference of a drum partially, and the male part material 22 has joined it through adhesives 36 to the inside nonwoven fabric 26. This male part material 22 will be attached firmly to the target zone 29 shown by the imaginary line formed in the back vane 12 possible [exfoliation], if the fastener section 21 is bent at the inside side of a diaper 1 (refer to drawing 1).

[0012] the fastener section 21 is included in the back vane 12 -- in the whole region, many crevices 20 are mostly formed in the inside nonwoven fabric 26. A crevice 20 is formed by pressing the inside nonwoven fabric 26 partially by pressing under temperature which the thermoplastic synthetic fiber which constitutes the inside nonwoven fabric 26 more preferably softens or fuses. In the crevice 20, compared with the circumference region, it contacts densely, and a confounding is carried out strongly mechanically or the pressed fiber welds. The motion between configuration fiber is controlled by such a confounding and welding, and, as for the inside nonwoven fabric 26, tensile strength and rigidity become high by them. So, in the back vane 12 of this diaper 1, in order to raise tensile strength, it is not necessary to say that many nonwoven fabrics with a big basis weight are used. however, the quantity per unit area of the crevice 20 in the back vane 12 since the fuzz of the inside nonwoven fabric 26 of fiber decreases and firm attachment of the male part material 22 becomes difficult by forming many crevices 20 (consistency of a crevice 20) -- a target zone 29 -- few -- other than this -- coming out -- it is made so that it may increase. For example, the inside nonwoven fabric 26 is a basis weight 10 - 100 g/m². When it is what consists of a polypropylene fiber, the crevice 20 of a large number with a diameter of 0.2-1.5mm makes the area rate included by the back vane 12 10 - 50%. However, in a target zone 29, it is made values fewer 5 to 20% than the area rate.

[0013] If the back vane 12 is made in this way, even if the inside nonwoven fabric 26 originally has low tensile strength, the reinforcement will improve by formation of a crevice 20, and, moreover, the problem that the firm attachment force of the male part material 22 may decline by formation of a crevice 20 will be solved by formation of the target zone 29 with much fuzz. Around a target zone 29, since the consistency of a crevice 20 is high and tensile strength is high, even if the tensile strength of a zone 29 is low, the tensile strength of the back vane 12 does not necessarily fall remarkably by it.

[0014] When diapers 1 are a thing for adults, especially the thing used for a bedridden adult, and making a diaper 1 detach and attach, the back vane 12 may have to be pulled strongly. However, since it is not necessarily welcomed in the point of ingredient cost and saving resources, as for the thing [as / in this diaper 1] for which improvement in tensile strength is aimed at by formation of a crevice 20, it is significant to use a nonwoven fabric with a large basis weight for the back vane 12 in preparation for that.

[0015] In addition, in the diaper 1, it is made by the front vane 11 and the both-sides section of the length-from-the-crotch-to-the-cuff region 8 almost like the back vane 12. That is, the inside nonwoven fabric 26 and the outside nonwoven fabric 27 join with adhesives 38, and the crevice 20 is formed in high density. In the length-from-the-crotch-to-the-cuff region 8, the inside nonwoven fabric 26 formed into high rigidity by formation of a crevice 20 may stimulate a diaper wearer's skin. When there is the fear, the consistency of the crevice 20 in the length-from-the-crotch-to-the-cuff region 8 can be made low less than [it] like a target zone 29. The inside-and-outside side nonwoven fabrics 26 and 27 which form the method vanes 11 and 12 of these order and the flank of the length-from-the-crotch-to-the-cuff region 8 are joined to radial-border section 13b of the barrier cuff 13 currently preferably formed with the impermeable sheet by hot melt adhesive 39 or joining. Moreover, radial-border section 13b of the barrier cuff 13 is joined to the surface sheet 2 by hot melt adhesive 39 or joining. the adhesives 36-39 used for a diaper 1 -- the inside of a lengthwise direction and the direction of the circumference of a drum -- it can apply to an one direction intermittently at least.

[0016] Drawing 5 is the same drawing as drawing 4 which shows an example of the embodiment of this invention. In the back vane 12 in the diaper 1 in this case, a crevice 20 is formed in the inside nonwoven fabric 26, and the crevice 30 is formed in the outside nonwoven fabric 27. The location with crevices 20 and 30 may be located between the case where it is mutually in agreement in the vertical direction so that it may be illustrated, and the crevices 20 and 20 where a crevice 30 adjoins each other in the longitudinal direction of drawing. A crevice 30 raises the tensile strength of the outside nonwoven fabric 27, and it acts so that the rigidity of the back vane 12 may be raised. The depth with crevices 20 and 30 may be prolonged not only ranging over an illustration side but ranging over the inside-and-outside side nonwoven fabrics 26 and 27. For example, the crevice 20 may reach even the outside nonwoven fabric 27 from the inside nonwoven fabric 26. The crevice 20 in this case and 30 can strengthen the junction force of both the nonwoven fabrics 26 and 27. When the junction force is high, it is also possible to exclude both the nonwoven fabrics 26 and the adhesives 38 which intervene among 27.

[0017] Drawing 6 is also the same drawing as drawing 3 which shows an example of an embodiment. The target zone 29 runs through a vane 12 in the back vane 12 in the diaper 1 in this case. In such a diaper 1, in a series of processes of performing a high-speed mass production, it is unnecessary to adjust the location of the fastener section 21 and a target zone 29 in a lengthwise direction, and production control becomes easy so much.

[0018] Drawing 7 is also the same drawing as drawing 3 which shows an example of an embodiment. In the back vane 12 in the diaper 1 in this case, the tape member 33 in which the fastener section 21 is formed consists of plastic film, and the end section is being fixed to the external surface of the back vane 12 by the tape member 33 from which the vane 12 was made by another object. The male part material 22 of the mechanical fastener attached in the inside of the tape member 33 is attached firmly to the target zone 29 of the back vane 12.

[0019] In the example of this invention, the outside nonwoven fabric 27 is excluded and the back vane 12 formed with the inside nonwoven fabric 26 and the outside nonwoven fabric 27, the front vane 11, and the flank of the length-from-the-crotch-to-the-cuff region 8 can also be formed only with the inside nonwoven fabric 26. Moreover, while this invention replaces the back vane 12 with the front vane 11, the front vane 11 is replaced with the back vane 12, and it can also carry it out.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The partial fracture top view showing the inside side of a disposable diaper.

[Drawing 2] The top view showing the external surface side of a disposable diaper.

[Drawing 3] The partial enlarged drawing of a back vane.

[Drawing 4] The IV-IV line sectional view of drawing 3.

[Drawing 5] The same drawing as drawing 4 which shows the example of an embodiment.

[Drawing 6] The same drawing as drawing 3 which shows the example of an embodiment.

[Drawing 7] The same drawing as drawing 3 which shows the example of an embodiment.

[Description of Notations]

1 Disposable Diaper

2 Surface Sheet

3 Rear-Face Sheet

4 Core

6 Circumference Region of Forward Fuselage Assembly

7 Circumference Region of Back Drum

8 Length-from-the-Crotch-to-the-Cuff Region

11 Front Vane

12 Back Vane

20 Crevice

21 Fastener Section

22 Male Part Material

26 Inside Nonwoven Fabric

27 Outside Nonwoven Fabric

29 2nd Area (Target Zone)

[Translation done.]

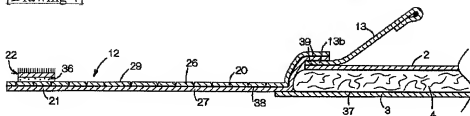
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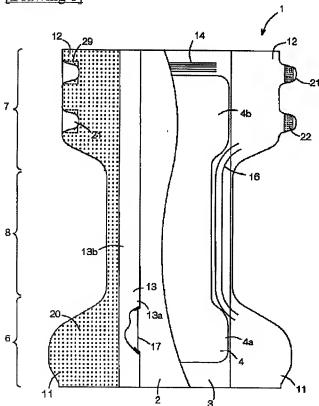
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DRAWINGS

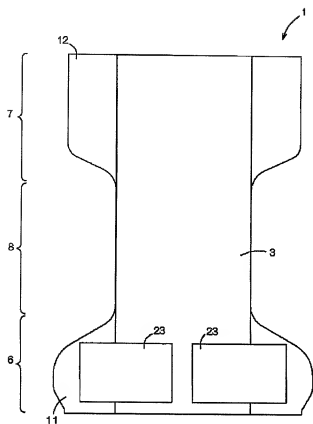
[Drawing 4]



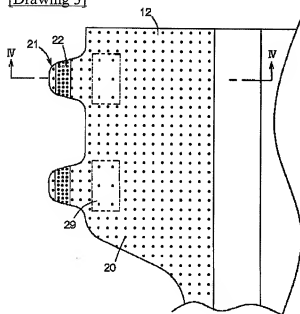
[Drawing 1]



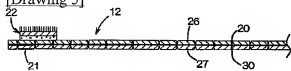
[Drawing 2]



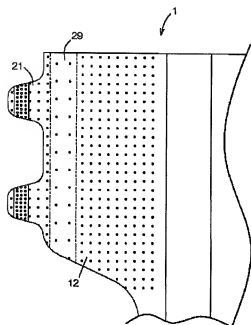
[Drawing 3]



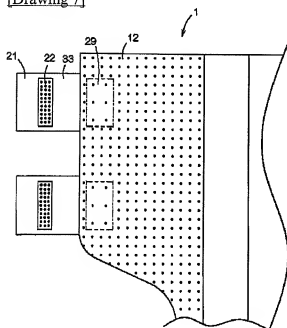
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]